



UTSA COVID-19 AI MODELING UPDATE (28TH APRIL, 2020)

Model 2: AI Theoretical Model: The AI approach frames a modified epidemic model as a recurrent neural network where contact rate is modeled as a function of real-time cell phone mobility data, allowing us to analyze the contributions of six different measures of mobility in the spread of the virus.

Collaborating Team (Project Alpha): UTSA ¹, SwRI ², UT Health San Antonio³

Figure 1: Forecasting of the cumulative cases for Bexar County for four different scenarios of physical distancing. Mobility data is real-time **cell phone/mobile device location** for Bexar County collected from Google LLC COVID19 Mobility Data. Mobility data comprises of six categories: retail, grocery&pharmacy, workplace, parks, residential and transit stations.

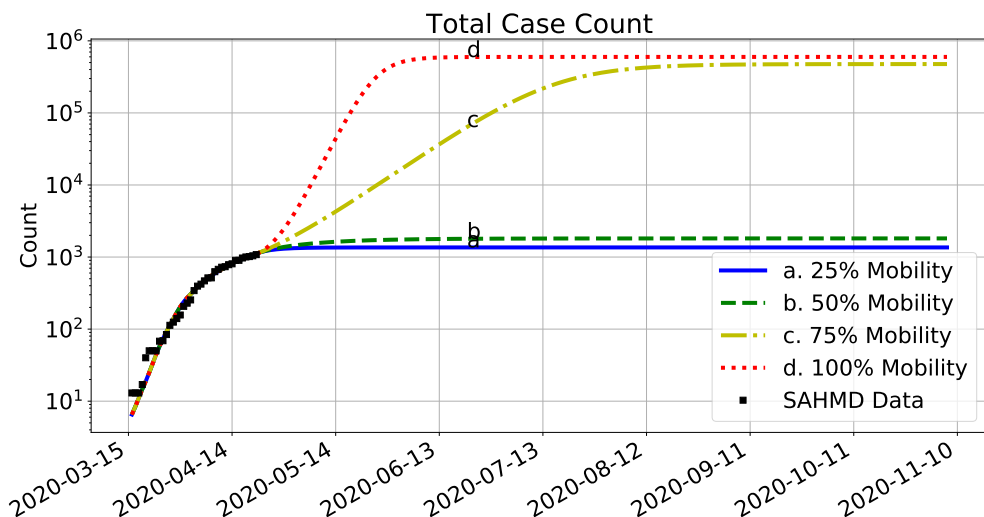


Table 1: Summary of model projections for population that will be actively infectious. Hospitalization for $\approx 20\%$ of the active cases.

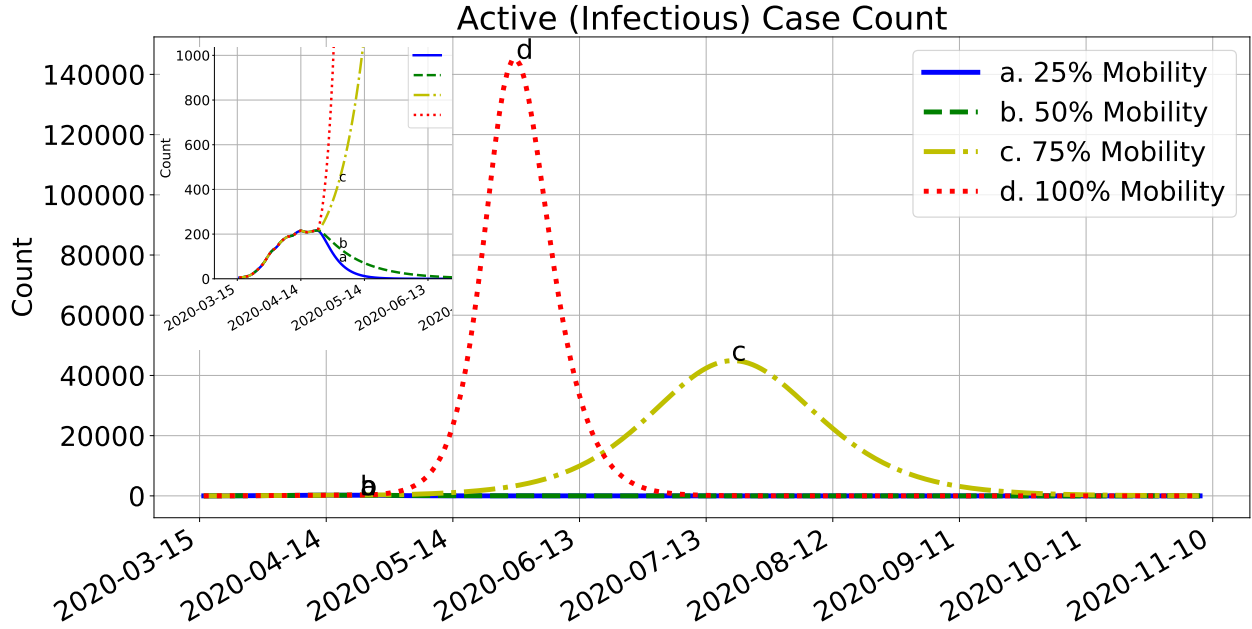
Label	Physical Distancing Scenario	Peak Active Cases	Peak Timeframes
b	50% Mobility (\approx Current Mobility)	216	Late April
c	75% Mobility (+50% Current mobility)	44916	Early July
d	100% Mobility (Pre COVID-19 mobility)	145181	Early June

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Figure 2: Forecasting of active cases for Bexar County for four different scenarios of physical distancing. Mobility data is real-time **cell phone/mobile device location** for Bexar County collected from Google LLC COVID19 Mobility Data. Mobility data comprises of six categories: retail, grocery&pharmacy, workplace, parks, residential and transit stations. Fig 2(a): Visualization of the active cases for four different scenarios of physical distancing. Fig 2(b) on the top left is further magnified onto the active cases with mobility of 25% and 50%. The scale is reflective of this change.



Important Note: ≈ 10 day latency between becoming exposed/positive confirmation (due to incubation period (≈ 5 days)/testing latency) are accounted in the model. Actual cases are expected to be $\approx 50\%$ higher than reported. Data-driven AI models provide a window into understanding the potential impact and should be treated as a qualitative guidance due to the rapid changes associated with the data collection, testing strategies, reporting, and the virus transmission.